

CLAIMS

1. A fuel cell comprising:

a solid electrolyte membrane;

a first electrode sheet including a plurality of first electrodes disposed on a single plane on one surface of the solid electrolyte membrane, and a resin section surrounding and supporting the first electrodes; and

a plurality of second electrodes disposed on the other surface of the solid electrolyte membrane, opposing to the first electrode and sandwiching the solid electrolyte membrane on the other surface of the solid electrolyte membrane;

wherein at least part of unit cells including the first electrodes and the second electrodes opposing to each other and the solid electrolyte membrane are connected in series by an electroconductive member penetrating the solid electrolyte membrane.

2. The fuel cell as claimed in claim 1, wherein the plurality of second electrodes constitute a second electrode sheet together with a resin section surrounding and supporting the second electrodes.

3. The fuel cell as claimed in claim 1, wherein the first

electrodes in the electrode sheet each include porous metal and a catalyst supported on the porous metal.

4. The fuel cell as claimed in claim 3, further comprising a catalyst-resin film containing particles having the catalyst thereon and hydrogen-ion conducting resin which is adhered on the porous metal.

5. The fuel cell as claimed in claim 3, further comprising a plated layer containing the catalyst which is formed on the porous metal.

6. The fuel cell as claimed in claim 3, wherein at least part of the porous metal is hydrophobically treated.

7. The fuel cell as claimed in claim 1, wherein the first electrodes constitute a fuel electrode and the second electrodes constitute an oxidant electrode.

8. The fuel cell as claimed in claim 7, wherein a periphery of the pair of the electrode sheets is sealed to incorporate the solid electrolyte membrane therein.

9. The fuel cell as claimed in claim 1, wherein a current collector is embedded in the resin section to be connected to the

first electrodes and/or the second electrodes.

10. The fuel cell as claimed in claim 1, wherein the electroconductive member is connected to the first electrodes and the second electrodes without an intervening current collecting plate.

11. A method of fabricating a fuel cell comprising the steps of:
disposing, on both surfaces of a solid electrolyte membrane, a first electrode sheet including a plurality of first electrodes disposed on a single plane and a resin section surrounding and supporting the first electrodes, and a second electrode sheet including a plurality of second electrodes disposed on a single plane and a resin section surrounding and supporting the second electrodes; and

thermally pressing the pair of electrode sheets to seal peripheries thereof.

12. The method of fabricating the fuel cell as claimed in claim 11, wherein the thermally pressing step is such that the pair of electrode sheets are thermally pressed in a state that the electroconductive member is disposed in a position where the first electrodes and the second electrodes sandwiching the solid electrolyte membrane are overlapped, thereby sealing the peripheries of the pair of the electrode sheets and forming the

electroconductive member connecting porous metals to each other on the respective surfaces of the solid electrolyte membrane.

13. The method of fabricating the fuel cell as claimed in claim 12, wherein the electroconductive member forming step includes the steps of allowing an electroconductive rivet to penetrate a stack including the porous metals and the solid electrolyte membrane, and enlarging diameters of top end and bottom end of the rivet.

14. The method of fabricating the fuel cell as claimed in claim 11, wherein the first electrodes and/or the second electrodes each include the porous electrode and a catalyst supported thereon.